



# SCALING UP GREEN BOND MARKETS FOR SUSTAINABLE DEVELOPMENT

An Executive Briefing  
for the public sector to  
stimulate private sector  
market development  
for green bonds

CONSULTATION PAPER

# Executive Briefing

**T**his Briefing offers a range of options for building green bond markets which ultimately will help policymakers, regulators and public financial institutions meet their infrastructure investment needs, capital market development aims, and targets for climate action and environmental protection.<sup>1</sup>

The Briefing is the first result of a partnership between the Climate Bond Initiative, UNEP Inquiry and the World Bank Group that will produce a guide to practical options for policy makers to scale up green bond markets for sustainable development.

## The financial challenge of building green infrastructure

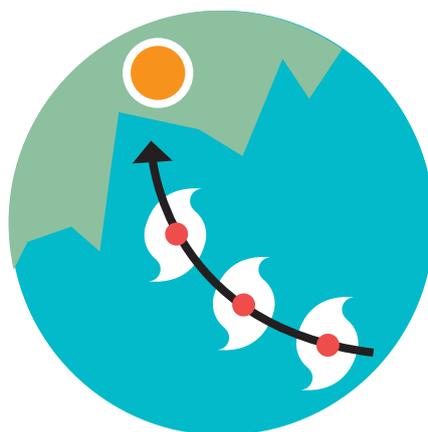
Climate change is an overarching challenge for achieving sustainable development. Climate change mitigation and adaptation present huge challenges for infrastructure projects. Even at the lower end of climate change predictions, improving infrastructure to make it resilient to more extreme weather could cost an extra USD 150 billion per year by 2025.<sup>2</sup> If temperatures continue to increase beyond the 2 degrees Celsius trajectory, the adaptation costs rise dramatically.

The investment needed for adaptation is currently dwarfed by the USD 6.2 trillion annual investment needed for new low-carbon infrastructure, which countries must start building now if they are to limit the effects of climate change.<sup>3</sup>

Despite the urgent need to build climate-resilient infrastructure suitable for a low-carbon economy, these massive investment needs are not being met. Funding for infrastructure is around USD 5 trillion each year, leaving an annual gap of more than USD 1 trillion, and only 7-13% of current infrastructure projects are estimated to be low-carbon and designed to deal with the extra impacts of a changing climate.<sup>4</sup>

### The period to 2020 is crucial for investing in green infrastructure.

The world's climate faces the risk of a series of systemic "tipping points", in which increasing emissions trigger feedback loops that lead to unavoidable and rapid increases in temperature. The world's economies have only a short



window - perhaps five years - to reduce emissions to avoid these tipping points. That means investing immediately is crucial, a failure to fund green projects is an enormous missed opportunity to act. Successfully creating a low-carbon economy now, which keeps the climate within a 2 degree Celsius increase is vastly cheaper than dealing with the effects of a more dramatic increase.

Low interest rates and the positive role infrastructure investment can - and needs to - play in reviving and in many cases maintaining economic growth, add to the rationale of investing now.

Readying the world economy for the climate change challenge can be seen as a major investment opportunity, one that goes far beyond the energy sector, in all asset classes, sectors, industries and countries. This includes low-carbon transport, such as railways and urban metros, and low-emission buildings, both new constructions and retrofitted existing

buildings.<sup>5</sup> The size of the investment opportunity increases by considering the full value of the assets in the economy that are being made low-carbon and climate resilient - for example the full value of the low-emission buildings - not just the marginal costs of ensuring the infrastructure is climate-aligned.

### In the post financial crisis environment, the financial challenge of building green infrastructure cannot be met with public sector funds and bank finance alone.

With public sector balance sheets stretched and bank capital increasingly constrained, new sources of capital will need to be tapped. Even in China, the government recognizes that public funds will only cover about 10-15% of the green investments required in the country over the next years.<sup>6</sup>

**1.** The Guide builds on policy work at the Climate Bonds Initiative, the World Bank Group in growing local debt capital markets and of the UNEP Inquiry into the Design of a Sustainable Financial System. Input came from the OECD, and from 40 stakeholders from central banks, governments, development banks, the private sector and NGOs, convened in a workshop in Washington DC, and from bilateral interviews and discussions.

**2.** UNEP. (2014) 'The Adaptation Gap Report: A Preliminary Assessment'. Available from: [http://www.unep.org/climatechange/adaptation/gapreport2014/portals/50270/pdf/AGR\\_FULL\\_REPORT.pdf](http://www.unep.org/climatechange/adaptation/gapreport2014/portals/50270/pdf/AGR_FULL_REPORT.pdf).

**3.** In constant 2010 dollars. The Global Commission on the Economy and Climate. (2014) 'Better Growth, Better Climate: The New Climate Economy Report'. [www.newclimateeconomy.net](http://www.newclimateeconomy.net).

**4.** Canfin and Grandjean (2015): Mobilizing climate finance: a roadmap to finance a low-carbon economy. Final report of the French Presidential Commission on Innovative Climate Finance chaired by Pascal Canfin and Alain Grandjean.

**5.** See Climate Bonds Initiative taxonomy for project types aligned with a low-carbon and climate resilient economy.

**6.** The People's Bank of China and UNEP Inquiry into the Design of a Sustainable Financial System (2015): Establishing China's green financial system. Final Report of the Green Finance Task Force. April 2015.

# Institutional investors have the capital and are ready to invest in green

Institutional investors, including pension funds and insurance companies, who have USD 93 trillion of assets under management in OECD countries alone, have a role to play to provide the necessary capital.<sup>7</sup> Green bonds offer one way to leverage their capital for investment in assets in the real economy.

## **Bonds are well suited to tap into institutional investors for infrastructure.**

Bonds are an attractive financing tool for infrastructure projects, providing a potentially low cost and long-term source of capital.

For low-carbon and climate resilient infrastructure, having access to low cost capital is particularly important, as it generally requires more upfront capital than high carbon, non-resilient alternative infrastructure, requiring longer-term capital to avoid refinancing risks.<sup>8</sup>

The cost of capital therefore has a significant impact on the economic

viability of low-carbon projects. This is particularly the case in developing markets, which is where most climate-friendly infrastructure investment is needed but which generally suffer from higher interest rates and capital costs.<sup>9</sup>

Bonds also address the investment needs of institutional investors, making them appropriate vehicles to tap into their large capital holdings at scale. Bonds, especially to finance infrastructure, can offer long-term maturities. Such bonds are a good fit with institutional investors' long-term liabilities, and allows asset-liability matching.

They can also provide much-needed diversification and more attractive yields, especially in markets with limited supply of bond instruments and a high concentration of investments in government securities.

At the same time bond returns are relatively stable and predictable when compared

to equity. This is an important feature for investors looking after beneficiaries' assets, such as retirees' savings.

## **Green bonds can provide additional benefits.**

Labelled green bonds are bonds whose proceeds are used for green projects, most usually climate change mitigation and adaptation, and labelled accordingly.

If an entity can issue a bond, it can issue a green bond, because the green label depends upon the type of projects funded, not the green credentials of the issuer. This means labelled green bonds can be issued by a wide range of entities, including larger, well-known companies with high credit ratings that account for a large share of institutional investors portfolios.

The green label makes it simple for institutional investors, who increasingly have made climate change commitments, to identify green investments.

The label is a discovery tool that reduces friction in the investment process.

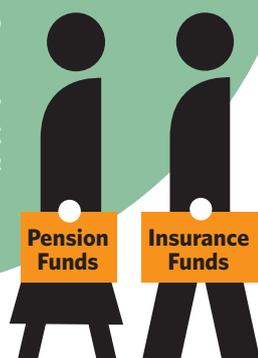
In June 2015, the outstanding issuance in the green bond market stood at USD 66 billion.<sup>10</sup>

Labelled green bonds have been issued in emerging markets, including India and Brazil, as well as in developed economies, and there is a strong appetite for green bonds amongst investors. The labelled green bond market is small relative to the unlabelled climate-aligned bond universe, which stands at USD 532 billion, but labelled green bonds are the fastest growing segment of the market.<sup>11</sup>

September 2014 UN Climate Summit  
**Institutional investors with  
\$43 TRILLION**  
of assets under management are ready to invest

Global Investor Statement on Climate Change calls on governments to take action to enable scaling up investment, and say they "stand ready to invest in climate".

Insurance Industry commits to increasing the amount invested in climate-smart investments to ten times the current amount by 2020.<sup>12</sup>



<sup>7</sup> Data on assets under management in 2013. Source: OECD (2015): Mapping channels to mobilize institutional investment in sustainable energy.

<sup>8</sup> In constant 2010 dollars The Global Commission on the Economy and Climate. (2014) 'Better Growth, Better Climate: The New Climate Economy Report. Available from: [www.newclimateeconomy.report](http://www.newclimateeconomy.report).

<sup>9</sup> For example, reducing the cost of capital in India to the levels available in US or Europe could reduce project costs for renewable energy projects by as much as 32%. Source: Nelson, D. and G. Shrimali. (2014). Finance Mechanisms for Lowering the Cost of Renewable Energy in Rapidly Developing Countries. Climate Policy Initiative

<sup>10</sup> Climate Bonds Initiative (2015): Bonds and Climate Change: State of the Market

<sup>11</sup> *ibid.*

<sup>12</sup> Insurance sector announcement at UN Climate Summit 2014. <https://www.icmf.org/news/insurance-industry-double-its-climate-smart-investment-end-2015>

# Green bonds: a tool to tap into institutional investment

The investor demand for green bonds indicates that, over time, the market can be a significant contributor to closing the investment gap for climate-friendly infrastructure in both developed economies and emerging markets. However, the green bond market needs to scale up more quickly than current trends to keep pace with the climate challenge.

Yet the challenges to building bond markets - in addition to greening these markets - are not inconsiderable.

**Public sector support is required, and indeed vital, given the scale of the investments required and the urgency with which they need to be made.**

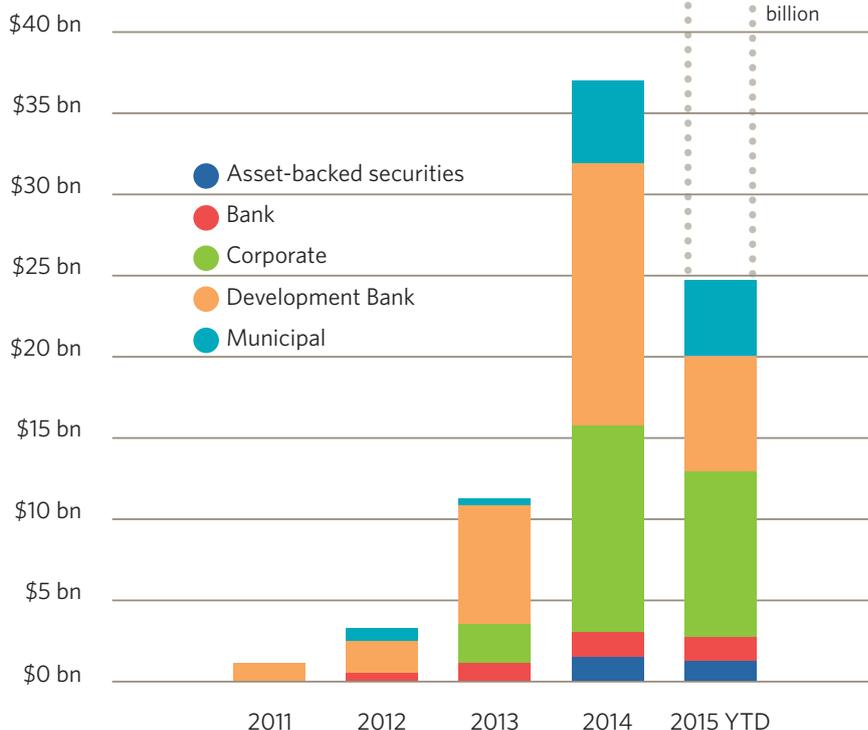
The potential opportunity of the labelled green bond market has caught policy makers' attention around the world - including in China, India, Brazil, Mexico and the EU.

The public sector can accelerate the shift towards climate-friendly investment and act where the market has yet to do so.

Green bonds can offer a fiscally efficient way of financing measures to meet climate change targets, without sacrificing general development, including improving infrastructure, public services and financial systems. In emerging economies in particular, an additional desirable factor is

## The green bond market is growing, but growth needs to be accelerated

Global labelled green bond issuance (USD/year)



2015 green bonds issuance is expected to reach USD 60-70 billion

Source: Climate Bonds Initiative (2015). Data 2 September 2015.

### Challenges for green bonds

Challenges to green bond market development include:

- Lack of bankable projects and robust project pipelines
- Lack of well functioning bond markets
- Lack of preparedness for bond financing
- Lack of commonly acceptable green standards
- Risk-averse investors with limited capacity to analyse green investments
- Relatively small investments that would not appeal to large institutional investors
- Involvement of many stakeholders that lack coordination

that labelled green bonds can be effective in attracting international investors to domestic infrastructure investments.

**Importantly, in emerging economies with nascent bond markets, green bond market development can be part of the general bond market development process.**

The fundamental challenges faced in underdeveloped bond markets will influence how far and fast a domestic green bond market can grow. But green bond transactions could still take place even if the general bond market is underdeveloped, provided a set of general bond market foundations are put in place.

The urgency of the climate change challenge and infrastructure investment needs mean countries cannot wait until they have mature bond markets to channel investments to green.

The processes of general bond market and green bond market development can be mutually reinforcing. Policymakers can benefit from taking into account the needs of green infrastructure early on as

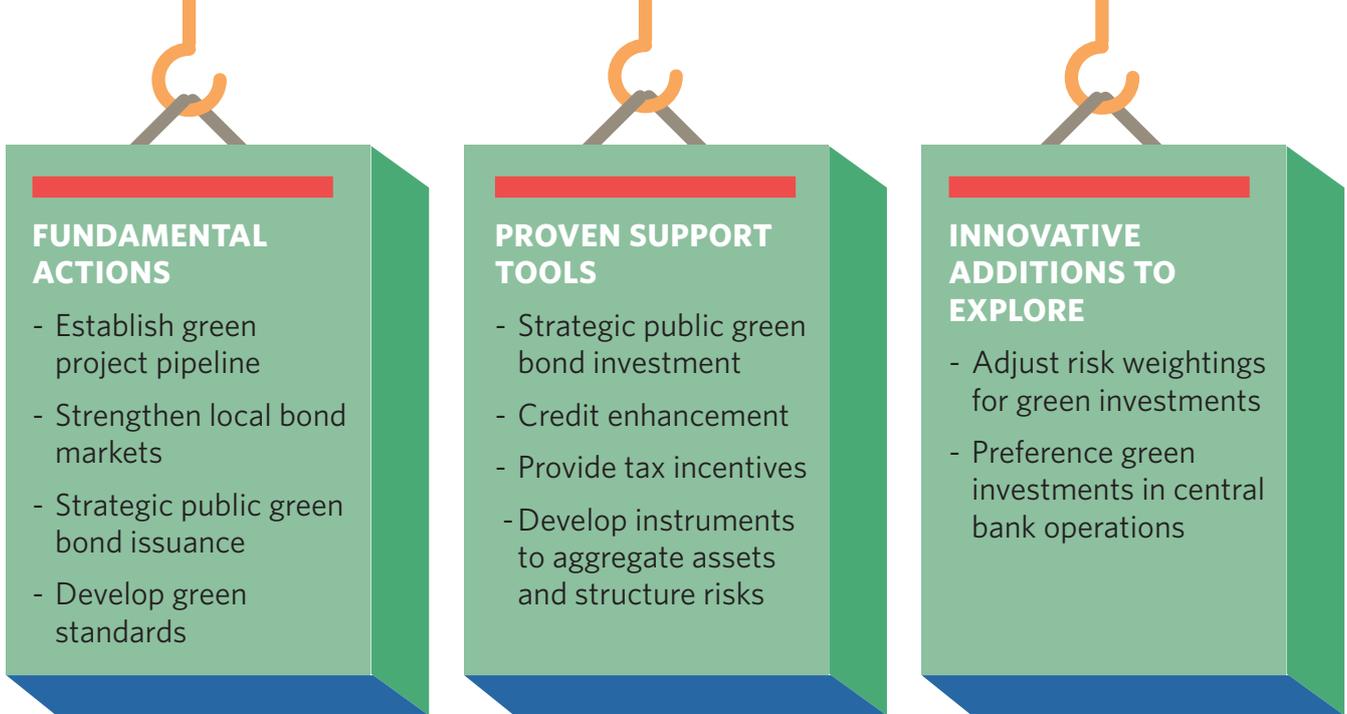
key regulations are put in place, helping to accommodate issuers and investors to facilitate green transactions.

At the same time, green infrastructure players can form a part of the issuer base, helping to grow the overall market. Additionally, making sure market structures are supportive for green investments might be easier when there is an on-going process of change underway.

Focusing on financing areas of high policy priority while still in the early stages of general bond market development is not new, or specific to green.

India is one example that has taken this policy priority approach with growing a domestic bond market, albeit one which is tilted towards infrastructure more broadly, rather than green infrastructure.

This sets a precedent for using the bond market to encourage investment into the specific area of climate change mitigation and adaptation in the market's early stages.



## To meet policy objectives, support growth in the green bonds market

This briefing offers a range of specific actions to help policymakers, regulators and public financial institutions, in both developed and developing economies, to translate their interest in green bonds into action.

Implementation of the proposed action areas will have to take into account the broader financial and macroeconomic context in each country. Actions to grow green bond markets vary between developed countries and emerging economies, as the latter also require more fundamental general bond market

development actions. This includes building a long-term government yield curve, ensuring a supportive financial sector regulatory environment, developing legal frameworks for different bond types and growing a domestic institutional investor base. Capacity building is equally important to regulatory changes.

Recommendations for public sector action to scale green bond markets are divided into three categories: Fundamental Actions, Proven Support Tools, Innovative Additions (see illustration over page).

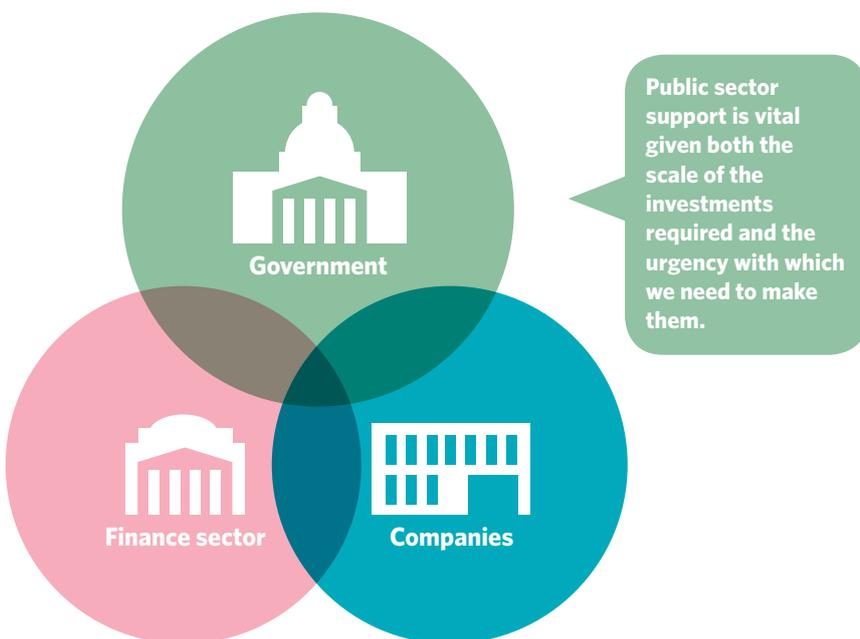
The most fundamental actions are market-building activities that have low fiscal impacts, and that have proven success in supporting bond markets. Next, there are proven support tools that have been used to further support bond market growth, but their use for labelled green bonds will vary depending on the policy priorities and fiscal space in different countries.

The fundamental actions and proven market boosters are tools commonly used in a transition phase to jump-start general bond market development. The difference here is that they are being applied specifically to facilitate investment in green projects.

Lastly, there are innovative ideas that could be explored, that are currently being used by certain leading players. The urgency and severity of the climate challenge means broadening the legitimate and necessary role of central banks and financial regulators may be warranted, as a number of emerging economies have recognized.

When exploring these potential areas for action, the public sector should consider possible unintended consequences of supporting green bonds through these mechanisms.

This proposed public sector action plan for the financial system complements climate policies in the real economy for a rapid transition to a low carbon and climate resilient economy.



# Best practice examples from around the world

## Fundamental actions

### Establish project pipeline

India and China have developed enormous infrastructure pipelines, and Kenya has devised a strategic project priority list.

A tool for other countries to also develop strong green project pipelines is to establish national agencies for infrastructure, as Australia, the United Kingdom and South Africa have done.

Governments can benefit from working more closely with development banks and investors in this process.

### Public sector green bond issuance

The multilateral development banks have been leading issuers of green bonds, led by the European Investment Bank and the World Bank Group.

Domestic development banks have also issued green bonds. For example, KfW, the German development bank, issued four green bonds from July 2014 to July 2015. Municipalities and municipality-linked public entities have also provided demonstration issuance in the US, Sweden, Norway, South Africa and France.

### Develop green guidelines and standards

China is developing country-specific Green Bond Guidelines and definitions to guide the market, as well as an official evaluation system to ensure that issuers adhere to the guidelines. In other regions, the public sector has recognized it can also play a role in harmonizing market-led guidelines. For example, harmonizing green bond standards across countries in the EU is on policymakers' agenda under the EU's Capital Markets Union.

### Collaboration

One collaborative model that has emerged in the market is National Green Bond Market Development Committees representing various stakeholders, in particular financial regulators, Ministries of Finance and development banks. Committees are currently being organized in Mexico, Brazil, Turkey, India, China and Canada. Global cooperation between the Committees will allow ideas and policy proposals to be shared and activities to be synchronized.

## Proven market support tools

### Public green bond investment

Sovereign wealth funds and public pension funds are well placed to invest in green bonds, playing a demonstration role for private sector investors. Norway's sovereign wealth fund, the largest in the world, invests in green bonds, as do several public pension funds including South Africa's Government Employees Pension Fund, Sweden's AP2 and AP3 and the California State Teachers' Retirement System (CalSTRS), the second largest public pension fund in the US.

Cornerstone investment from development banks is another type of public green bond investment that can boost the market by reducing perceived risk for private investors. IFC has for example invested in green bonds issued by Indian Yes Bank, using funds raised by their own IFC green bond issuance in the offshore rupee markets.

### Credit enhancement

Public credit enhancement, such as guarantees, subordinated debt and insurance, can be required in a transitional phase to reduce risk exposure for private investors. The Overseas Private Investment Corporation (OPIC) offers a specific green credit enhancement program that provides guarantees to green bond issuances. Existing credit enhancement schemes that are in place for infrastructure, such as the EU's Project Bond Initiative, could also be extended to green bonds.

**"Scale in the green bond market can only be reached by introducing government sponsored incentive structures for green bonds"**

-Ulrik Ross, Global Head of Public Sector & Sustainable Financing, HSBC

### Tax incentives

Tax incentives are a common tool used by the public sector to support certain segments of bond markets.

For green specifically, the US has offered tax incentives for bonds financing green buildings as well as renewable energy from 2009, in addition to providing tax incentives to more than 80% of the USD 3.7 trillion municipal bond market. Brazil allows tax-free bonds to be issued for wind developers, as well as other infrastructure investments and construction. In 2015, China proposed tax incentives specific for labelled green bonds, as part of their broader package for green bond support. Many other countries, including large emerging economies like Mexico and India, have tax incentives in the bond market for municipal bonds in particular. They could be expanded to apply to green bonds.

### Aggregation

Securitization is one option to aggregate small-scale green projects to be suitable for green bond issuance.

In Mexico, a demonstration green securitization deal aggregating energy efficiency loans is currently underway, supported by the Inter-American Development Bank.

In the US, the National Renewable Energy Laboratory (NREL) of the Department of Energy has set up a solar securitization working group that includes industry actors.

Public institutions could also set up a green warehouse to aggregate small-scale assets across originating entities. In the US, the state of Pennsylvania has established a Warehouse for Energy Efficiency loans in collaboration with the commercial bank Citi.

# With the right support in place USD 1tn of green bonds could be issued a year by 2020

Assets and projects currently funded by green bonds across a range of sectors

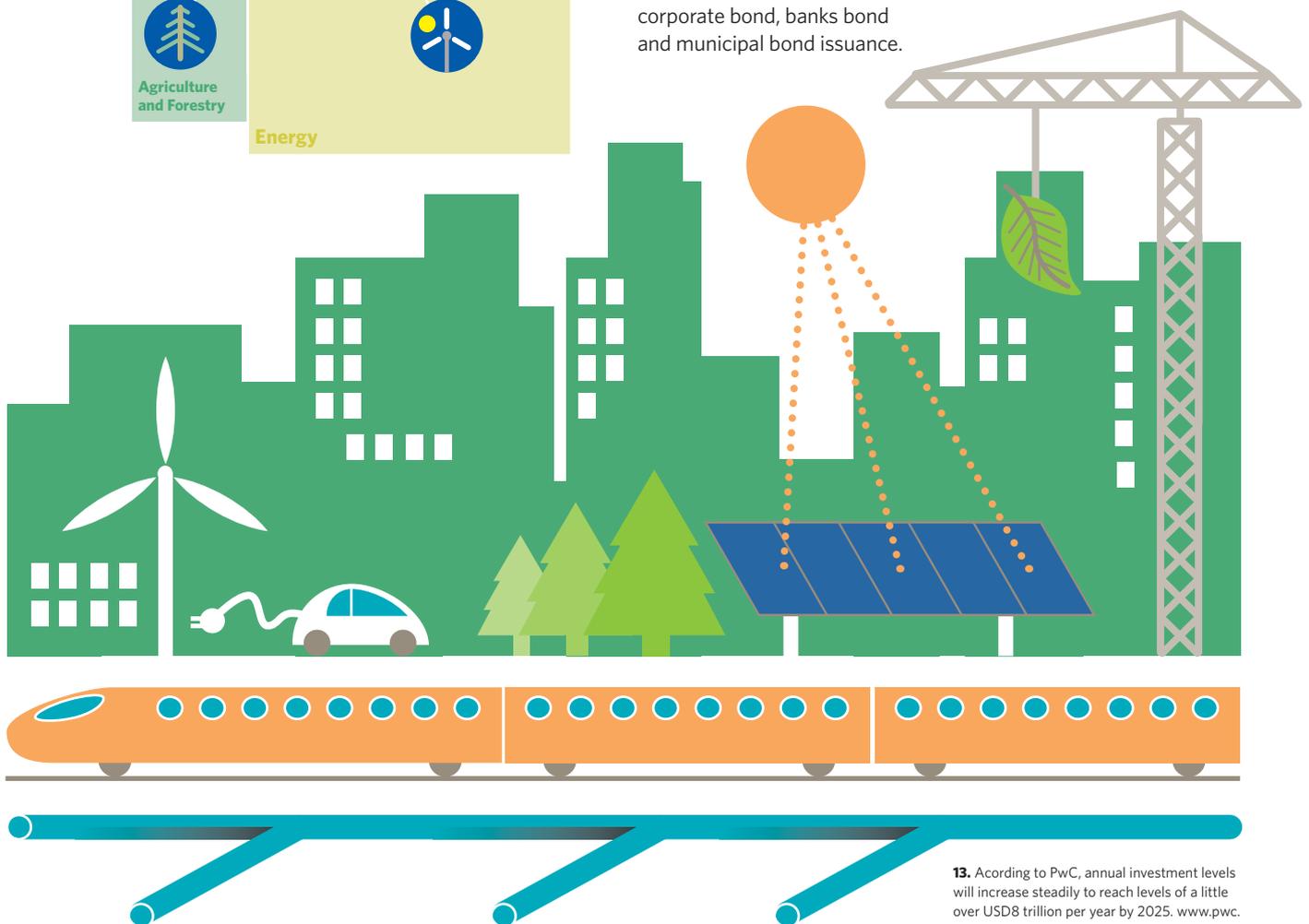


Drivers for a potentially rapid expansion of annual green bond issuance include increasing annual infrastructure investment<sup>13</sup> and a larger share of the infrastructure being climate-aligned over time. In particular, investment areas such as rail and telecommunications are seen by scientific experts to qualify as low-carbon as they lay the groundwork for a low-carbon economy by enabling the displacement of high-carbon travel.

Based on current practice in developed countries, it is assumed that 30% of infrastructure investment will be financed by bonds, both directly through infrastructure bonds and indirectly, through corporate bond, bank bond and municipal bond issuance.

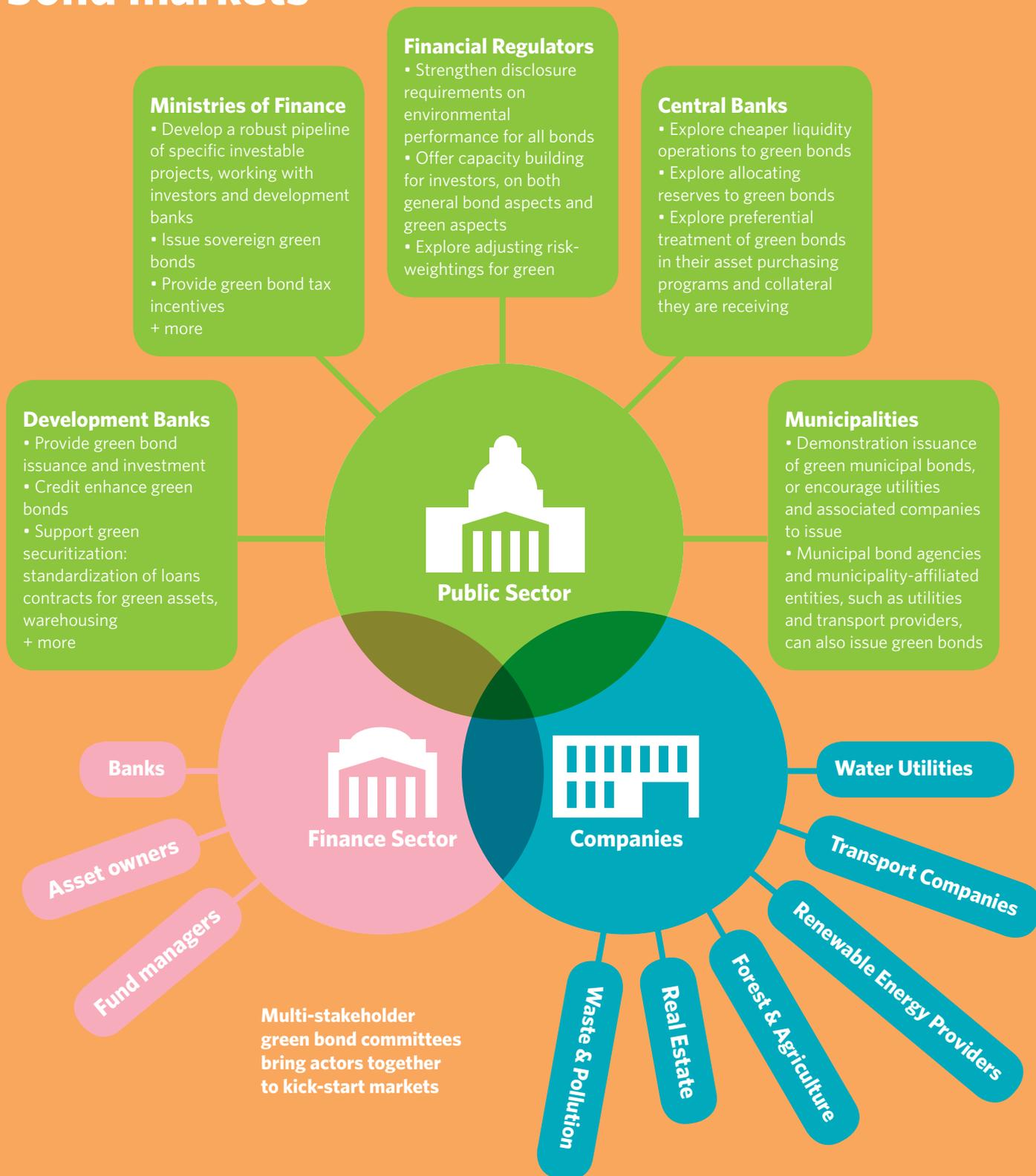
**Public sector action to support green bonds could have important positive impacts for sustainable development more broadly.**

By creating a powerful positive narrative around investing in profitable, environmentally friendly solutions, the green bond market could help develop broad momentum for environmental action amongst companies, investors and the public sector. Seeing the private sector play a pivotal role could help propel politicians towards more effective international environmental agreements, confident that the capital exists to fund the sustainable world they envisage.



<sup>13</sup>. According to PwC, annual investment levels will increase steadily to reach levels of a little over USD8 trillion per year by 2025. [www.pwc.com/cpi-outlook2025](http://www.pwc.com/cpi-outlook2025)

# How the public sector can support green bond markets



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The Climate Bonds Initiative is an investor focused not-for-profit, mobilizing debt capital markets for a rapid transition to a low-carbon and climate resilient economy.

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